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Skills Practice

Roots of Real Numbers

Use a calculator to approximate each value to three decimal places.

1. $\sqrt{230}$ 15.166

3. $-\sqrt{152}$ -12.329

5. $\sqrt[3]{88}$ 4.448

7. $-\sqrt[4]{0.34}$ -.764

2. $\sqrt{38}$

4. $\sqrt{5/6}$ skip

6. $\sqrt[3]{-222}$

8. $\sqrt[5]{500}$

Simplify.

9. $\pm\sqrt{81}$ ± 9

10. $\sqrt{144}$ 12

11. $\sqrt{(-5)^2}$ 5

12. $\sqrt{-5^2}$ Not Real

13. $\sqrt{0.36}$.6

14. $-\sqrt{\frac{4}{9}}$ $-\frac{2}{3}$

15. $\sqrt[3]{-8}$ -2

16. $-\sqrt[3]{27}$ -3

17. $\sqrt[3]{0.064}$.4

18. $\sqrt[5]{32}$ 2

19. $\sqrt[4]{81}$ 3

20. $\sqrt{y^2}$ y

21. $\sqrt[8]{125s^3}$ $5s$

22. $\sqrt{64x^6}$ $8x^3$

23. $\sqrt[3]{-27a^6}$ $-3a^2$

24. $\sqrt{m^8n^4}$ m^4n^2

25. $-\sqrt{100p^4q^2}$ $-10p^2q$

26. $\sqrt[4]{16w^4v^8}$ $2wv^2$

27. $\sqrt{(-3c)^4}$ $(-3c)^2$
 $9c^2$

28. $\sqrt{(a+b)^2}$ $(a+b)$

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Practice

Roots of Real Numbers

Use a calculator to approximate each value to three decimal places.

1. $\sqrt{7.8}$

2. 7.93

~~3. $-\sqrt{89}$~~

3. $\sqrt[3]{25}$

2.924

~~4. $\sqrt[3]{-4}$~~

5. $\sqrt[4]{1.1}$

1.024

~~6. $\sqrt[5]{-0.1}$~~

7. $\sqrt[5]{5555}$

4.208

~~8. $\sqrt[4]{(0.94)^2}$~~

Simplify.

9. $\sqrt{0.81}$ 0.9

10. $-\sqrt{324}$ -18

11. $-\sqrt[4]{256}$ -4

12. $\sqrt[6]{64}$ 2

13. $\sqrt[3]{-64}$ -4

14. $\sqrt[3]{0.512}$ 0.8

15. $\sqrt[5]{-243}$ -3

16. $-\sqrt[4]{1296}$ -6

~~17. $\sqrt[5]{\frac{-1024}{243}}$~~

18. $\sqrt[5]{243x^{10}}$ $3x^2$

19. $\sqrt{(14a)^2}$ 14a

20. $\sqrt{-(14a)^2}$ Not Real

21. $\sqrt{49m^2t^8}$
 $7mt^4$

22. $\sqrt{\frac{16m^2}{25}}$ $\frac{4m}{5}$

23. $\sqrt[3]{-64r^6w^{15}}$
 $-4r^2w^5$

24. $\sqrt{(2x)^8}$
 $(2x)^4 = 16x^4$

25. $-\sqrt[4]{625s^8}$
 $-5s^2$

26. $\sqrt[3]{216p^8q^9}$
 $6p^3q^3$

~~27. $\sqrt{676x^4y^6}$~~

28. $\sqrt[3]{-27x^9y^{12}}$
 $-3x^3y^4$

29. $-\sqrt{144m^8n^6}$
 $-12m^4n^3$

30. $\sqrt[5]{-32x^5y^{10}}$
 $-2xy^2$

31. $\sqrt[5]{(m+4)^6}$
 $m+4$

32. $\sqrt[3]{(2x+1)^9}$
 $2x+1$

33. $-\sqrt{49a^{10}b^{16}}$
 $-7a^5b^4$

34. $\sqrt[4]{(x-5)^8}$
 $(x-5)^2$

35. $\sqrt[3]{343d^6}$
 $7d^2$

36. $\sqrt{x^2+10x+25}$
 $\sqrt{(x+5)^2} = x+5$

~~37. RADIANT TEMPERATURE~~ Thermal sensors measure an object's *radiant* temperature, which is the amount of energy radiated by the object. The *internal* temperature of an object is called its *kinetic* temperature. The formula $T_r = T_k \sqrt[4]{e}$ relates an object's radiant temperature T_r to its kinetic temperature T_k . The variable e in the formula is a measure of how well the object radiates energy. If an object's kinetic temperature is 30°C and $e = 0.94$, what is the object's radiant temperature to the nearest tenth of a degree?

~~38. HERO'S FORMULA~~ Salvatore is buying fertilizer for his triangular garden. He knows the lengths of all three sides, so he is using Hero's formula to find the area. Hero's formula states that the area of a triangle is $\sqrt{s(s-a)(s-b)(s-c)}$, where a , b , and c are the lengths of the sides of the triangle and s is half the perimeter of the triangle. If the lengths of the sides of Salvatore's garden are 15 feet, 17 feet, and 20 feet, what is the area of the garden? Round your answer to the nearest whole number.